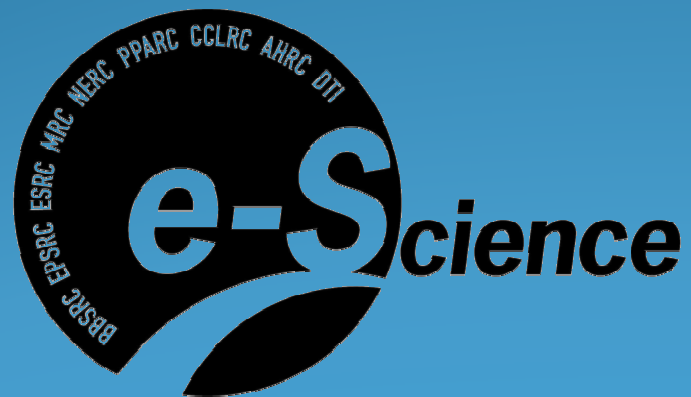


e-Science Talk...



Middlesex
University



By Vijay Sahota

Outline...



- What is e-Science?
- What can we use it for? (where?)
- Why should we care?
- What do we have?

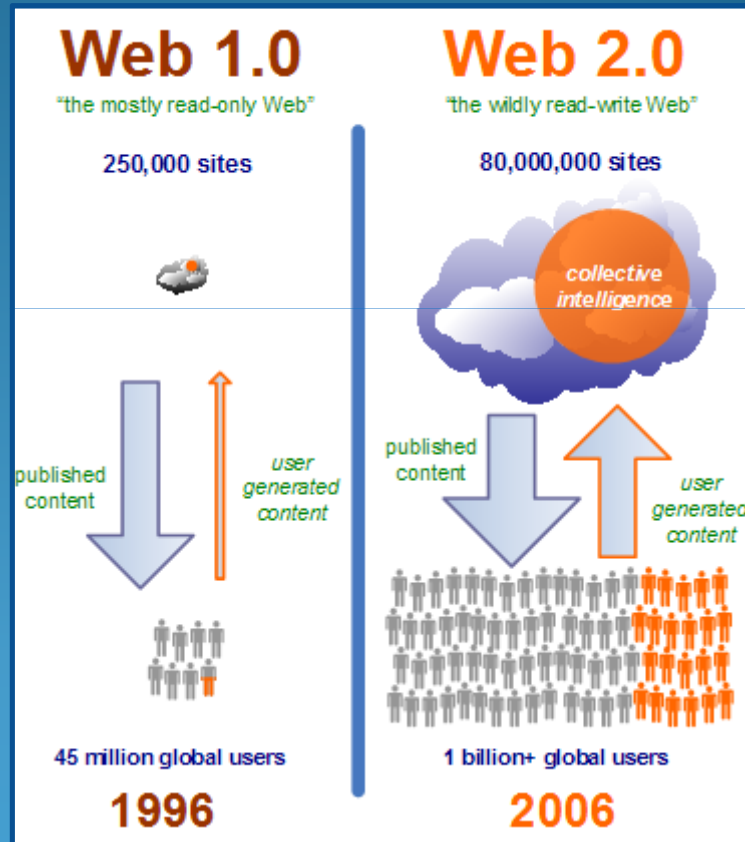
Significance of the web...



- The internet is BIG!
- Its worth £100bn a year growing at 10%
- Currently 7.2% (GDP)
- 60% is purchases & line rental
- If an economic sector it would be 5th

Web 2.0...

- Just the web but we (users) have more content control!



What does W2 mean???



Web 2.0 Apps & Data...

WEB 2.0 Landscape

Widget/
component



WEB APPLICATION



Aggregation/
recombination

CONTENT
SHARING



RECOMMENDATIONS/
FILTERING



Rating/
Tagging



www.futureexploraton.net

SOCIAL NETWORK

Collaborative
filtering

Note: Each of these Web 2.0 applications has multiple functionality - for each service the primary positioning has been used

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Internet the god Medium...

- Global audience
- Free to all
- Cheap to do
- It is now a background checker!
- Excellent feedback mechanism



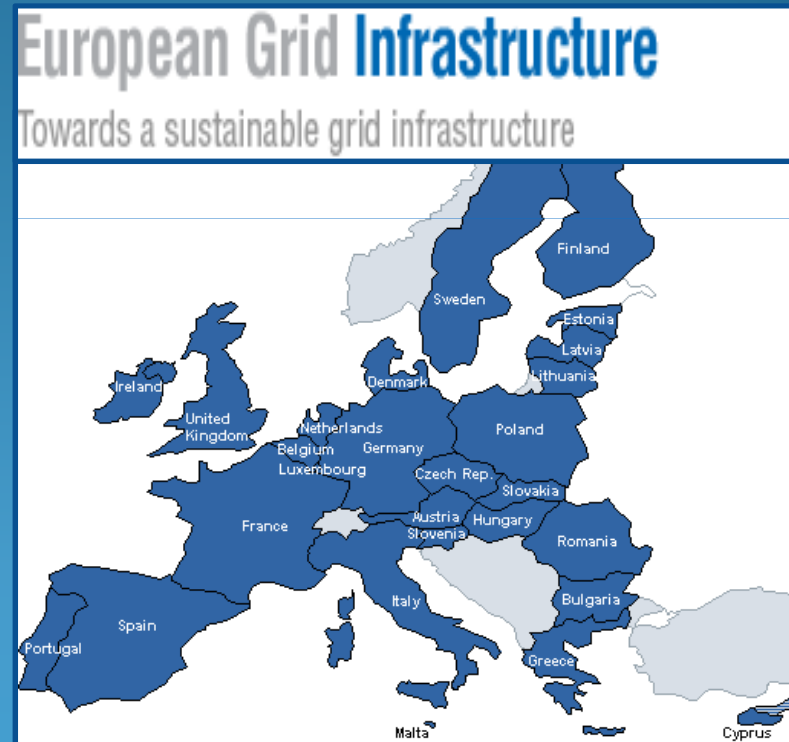
What is e-Science ???

- Not a Science
- Grids are only a tool
- About **Digital Collaboration**



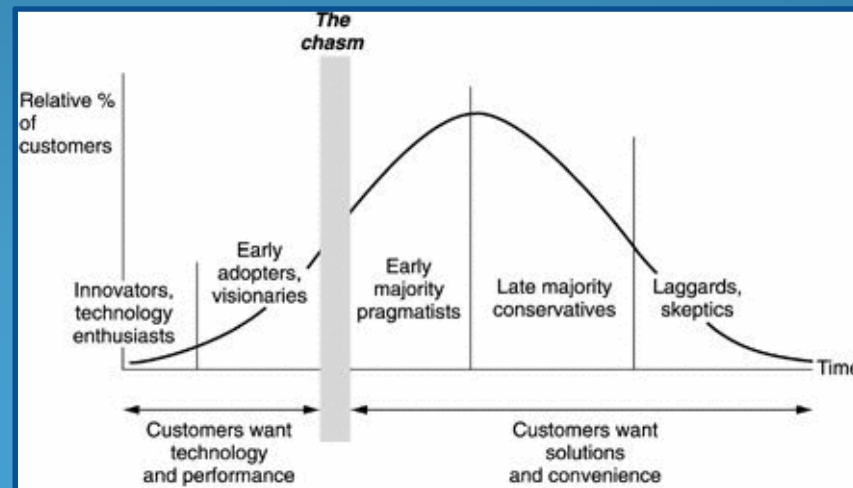
e-Science is BIG...

- 330 million Euros over 3 years for the EGI
- The infrastructure already exists!
- Will certainly be in many future EU calls



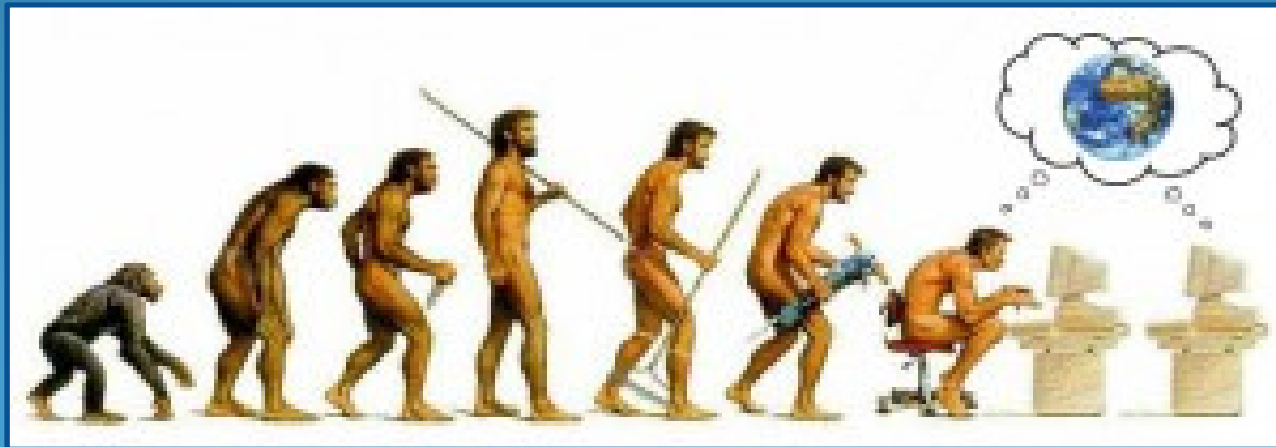
Why now???

- We are at the brink of the chasm
- Those who can make the jump, prosper
- Those who don't, get **left behind**.



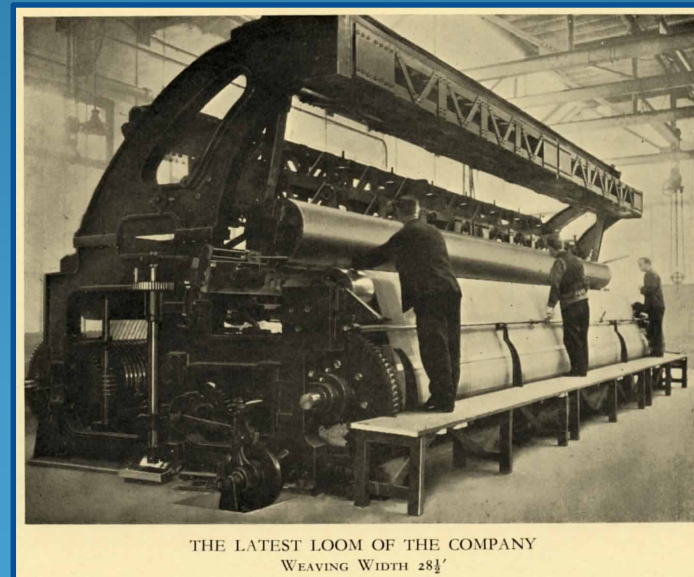
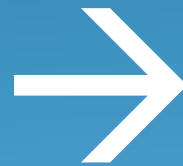
Why cross it?

- We will be on the wrong side of the third digital divide, and it will be hard to get out of it...



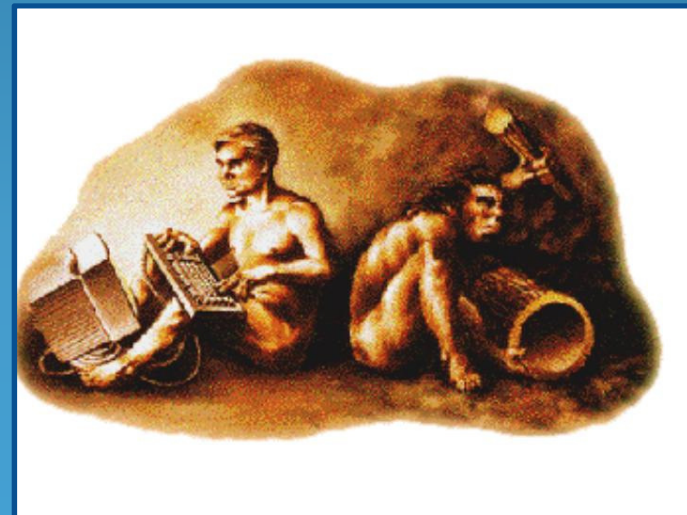
Why is there a chasm ?

- Although we are a 1st world, our research & teaching habits tell a different story...

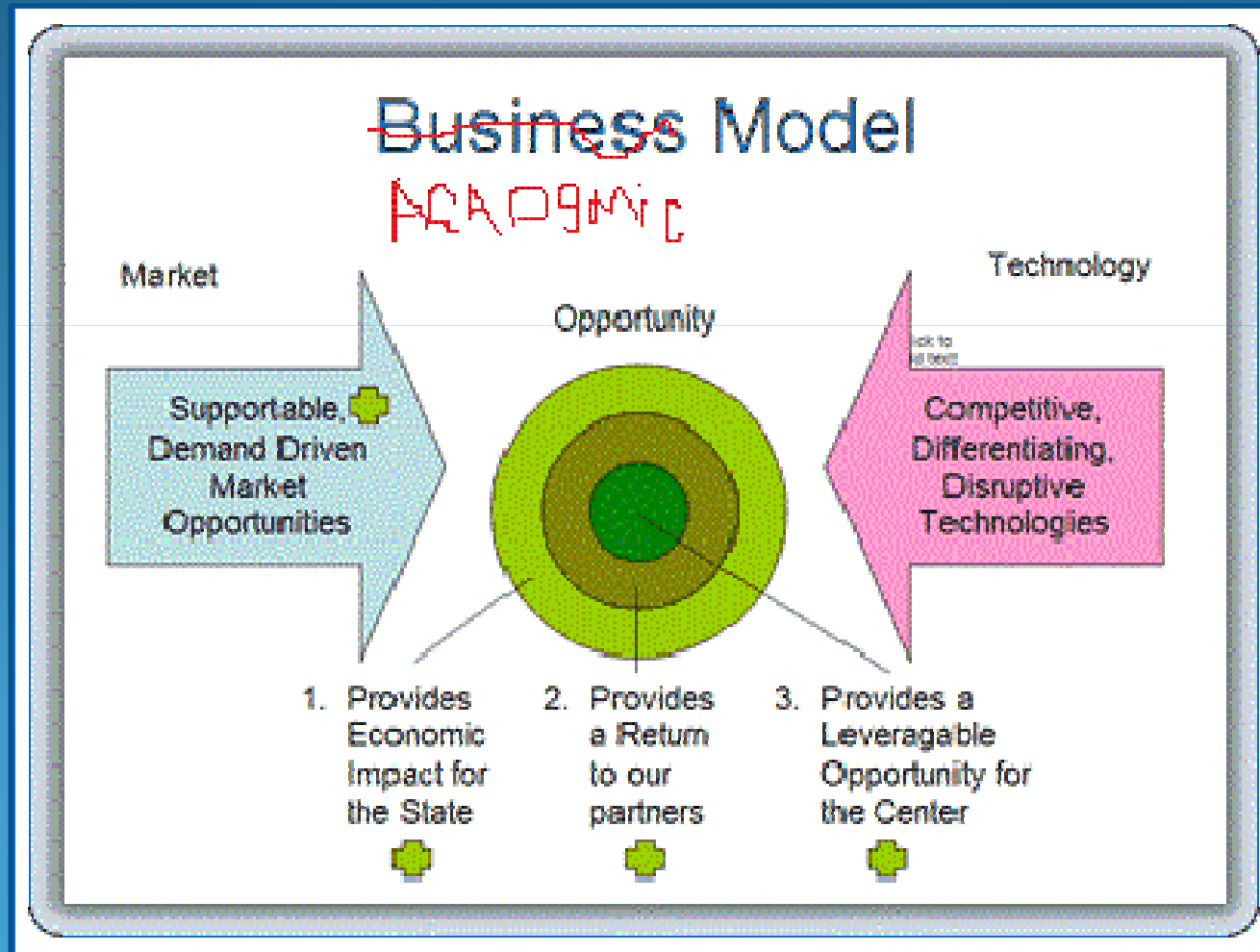


Digital Divide ???

- Data as with the web 2.0 is the driver
- Data and simulations are **cheap**
- Even free!
- We are only now starting to catch up!
- This divide mirror **industrialisation!**



Still not convinced ???



The Big Idea...



- Need to **start now**
- Digital community
- Educate Staff

- We need a road map, a **champion scheme**



What has to be done???

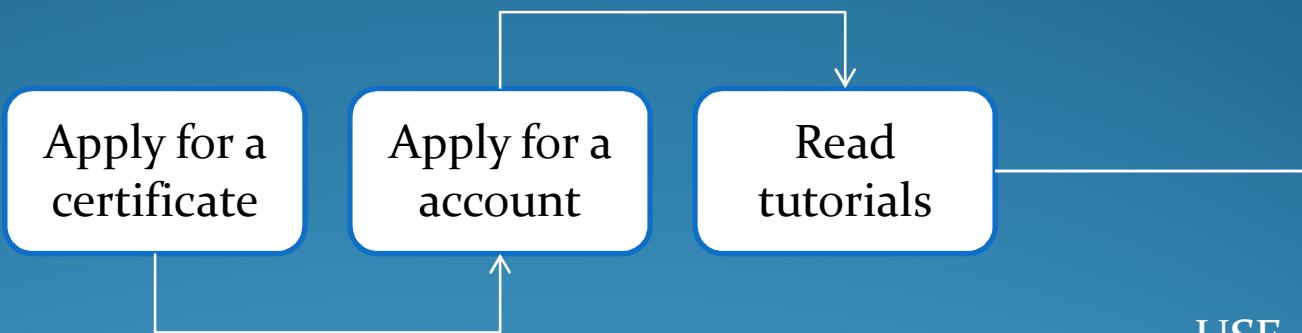
- interdepartmental collaborations
- novel applications
- digital values to all
- Break the circle of ignorance!



Ok what do we have???

- This talk is to **advertise and stir up interest**
- You have me , and I have you
- We have two compute facilities....
- Our own Linux cluster
- Access to the NGS





- **AstroPhysics**
- **BioMedical**
- **BioInformatics**
- **Chemistry**
- **Data Analysis**
- **Engineering**
- **Image Analysis**

The NGS used to stand for the National Grid Services, but are undergoing a rebranding and can't shake of this term!

It is a free Grid for academic use consisting of many institutes....

**Imperial College
London**



 **University of
Reading**

MANCHESTER
1824



Brunel
UNIVERSITY
WEST LONDON



Science & Technology Facilities Council
Rutherford Appleton Laboratory

Royal Holloway
University of London

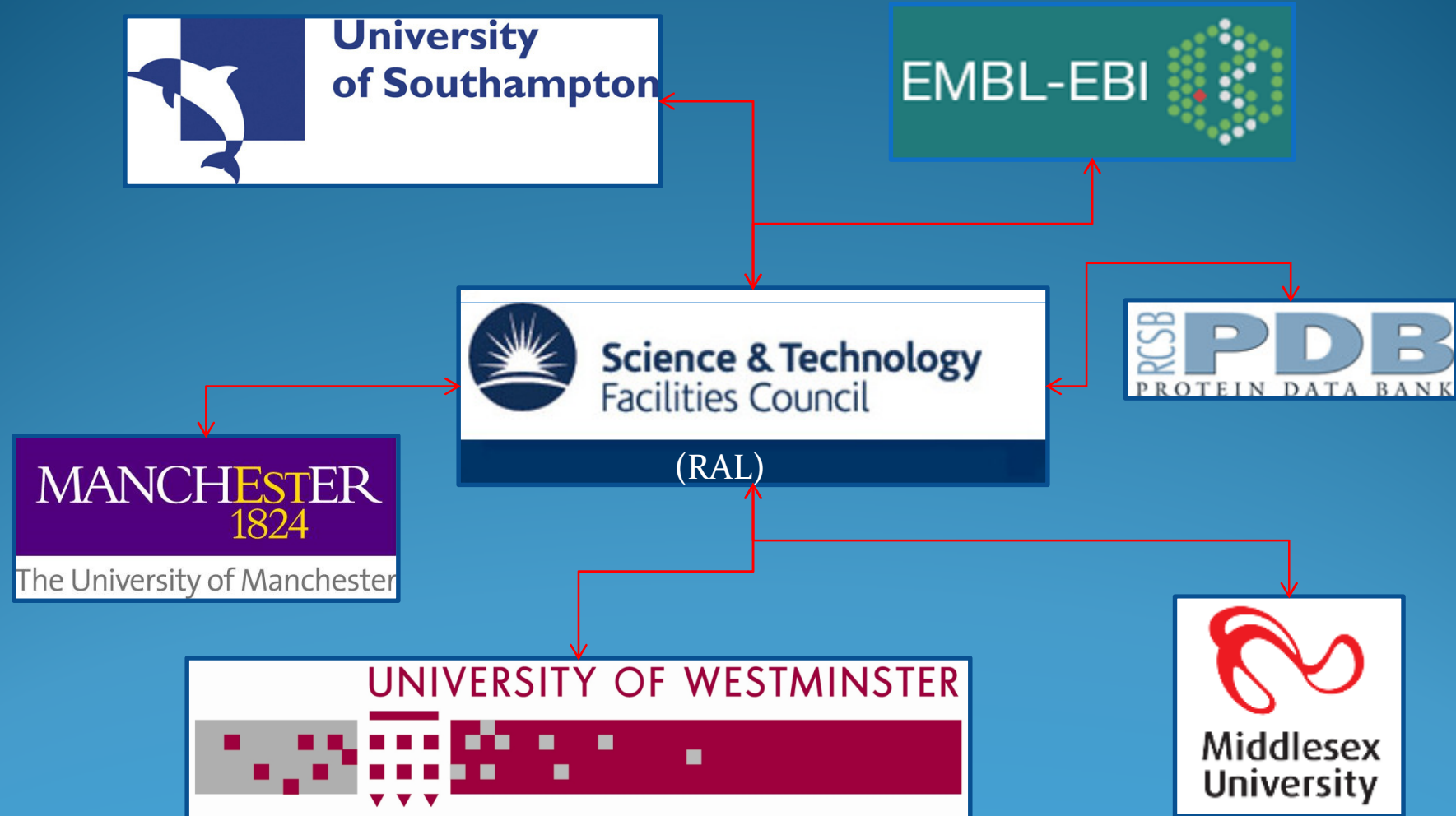
CARDIFF
UNIVERSITY
PRIFYSGOL
CAERDYDD



LANCASTER
UNIVERSITY
University
of Southampton



NGS in use...



MDX Cluster...



This one is simple, just **e-mail me** to get an account!

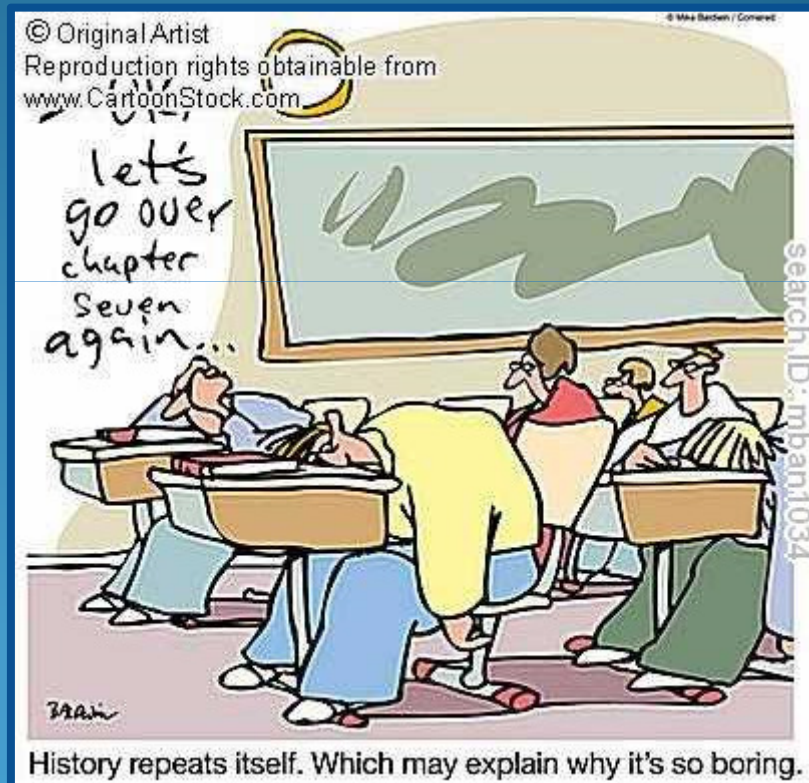


Intermission

TIME FOR A BREAK !

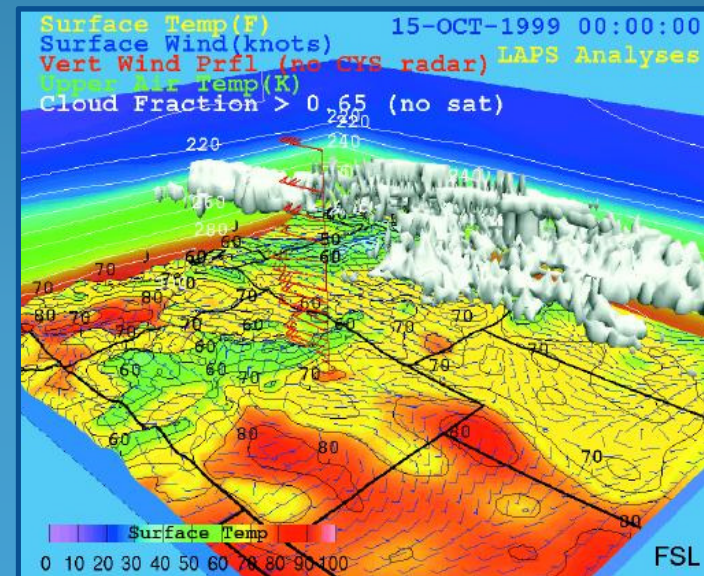
Teaching, Problems...

- Retention problem
- More competition
- Offer a little extra
- Dated methods
- IT skills missing



Void in data intensive teaching...

- **No wide adoption** of informatics/ modelling/ visualisation
- The expertises exists, just a little glue is needed to **kick start** things



Forums...

- Open discussions / Debates
- Anonymous users will provide honest/
free willed comments
- Good feedback
- Good Monitor
- Digital Honesty
- Virtual real-estate



Virtual Conferencing...

- The ability to be in more than one place!



ACCESS GRID

Documents & Collaborations....

- This allows for collaborations to work on a document/ common goal in real time.



What MDX has done???

- We have Oasis+ (Web CT) and MDX play
- Nice, but every one has Web CT
- We need to get everyone using it though
- This stuff is **NOT OPEN**

Digitalize Courses???

- We need to make a teaching i-player
- Give student better organisation
- Will produce better students
- Better employability?
- **OPENNESS** is Key to success!
- These aren't VLE's, but organic networks

Teaching through Sims...

- Makes teaching cheaper
- Can be taken home
- Increase IT literacy
- Data handling/ processing is STEM
- Future proofing our courses

Research???

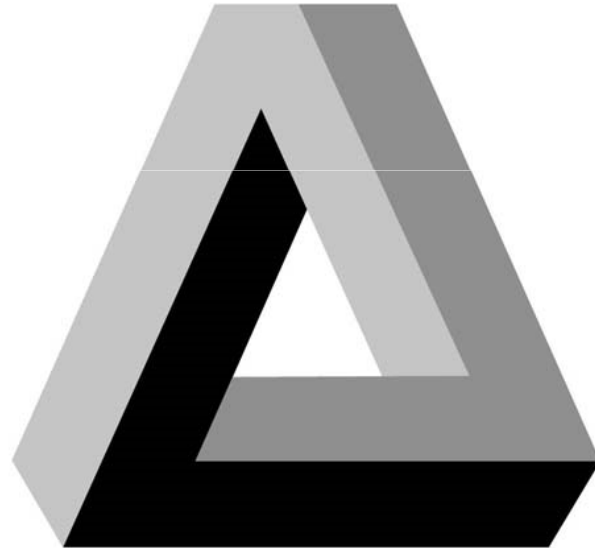


- Internet is indispensable
- We use it to get answers...
- Why not put them there

- We need to be there (online) for our accomplishments to be seen

The 3 Biggies!!!

Collaboration



Analysis

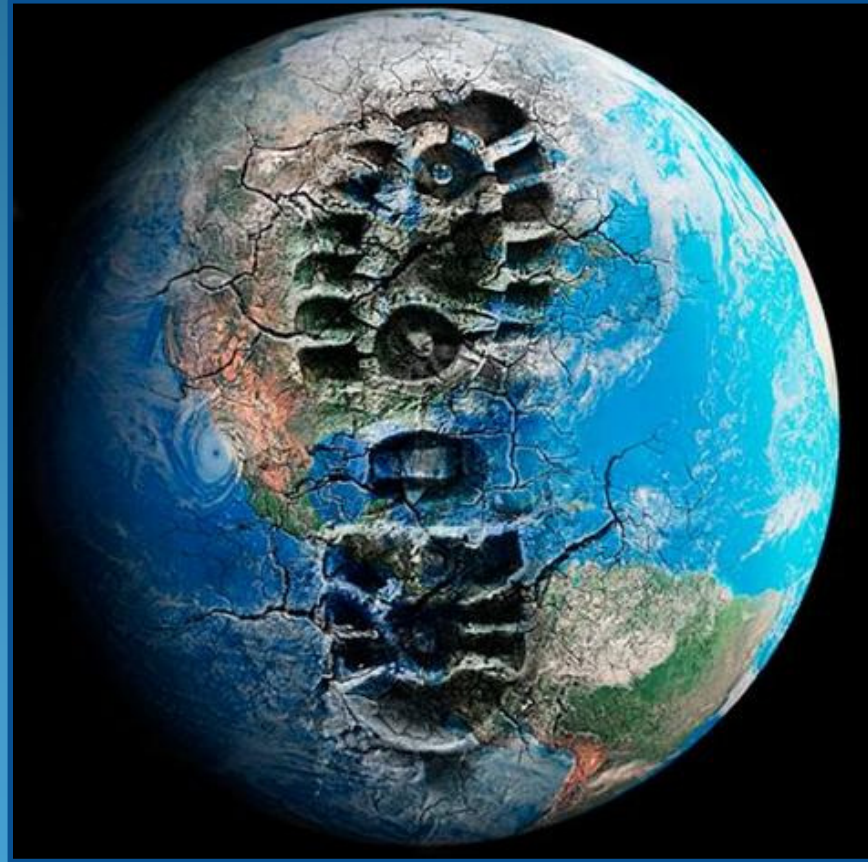
Data

What we don't have...

- Not the whole package perhaps bits
- how does it impacts MDX?
- More and More calls are data, collaborative orientated.
- **e-Science** is fast becoming a **Perquisite**
- **No mass storage, processing or platform**

Research foot print???

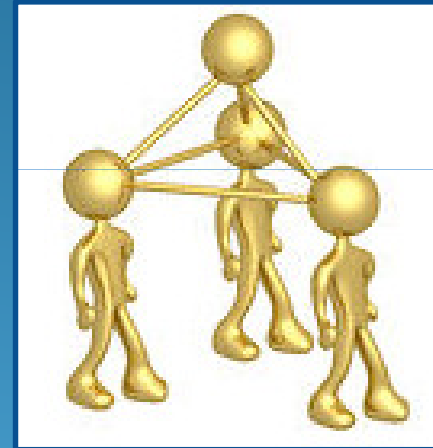
Grids will allow us to store and process more, and the ability to create apps!





Human Network..

- Harness existing expertise
- To seed innovative ideas
- Create a collaborative melting pot



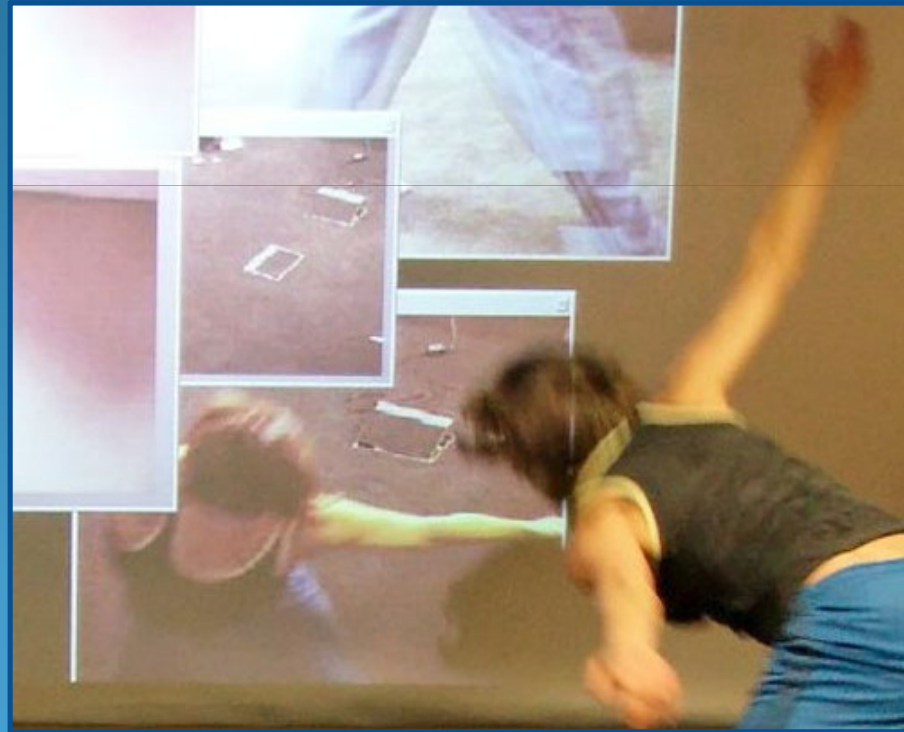
UCL Example...

- UCLs Centre of Computational Science
- Small number of permanent
- Published 200+ papers
- Narrow spread
- E-Science it isn't

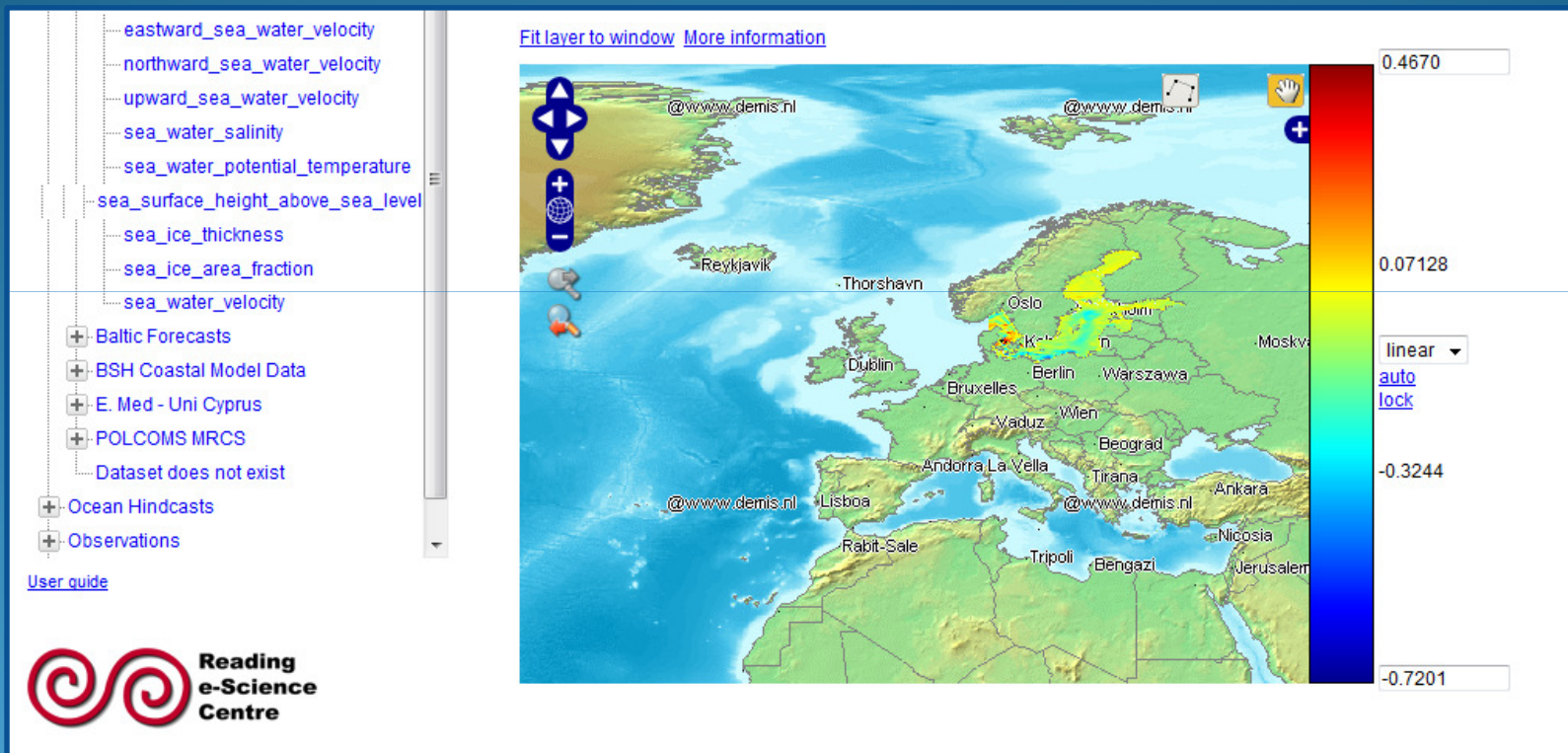


E-Dance

- Shaping dance choreography, online (OU)



Godiva2



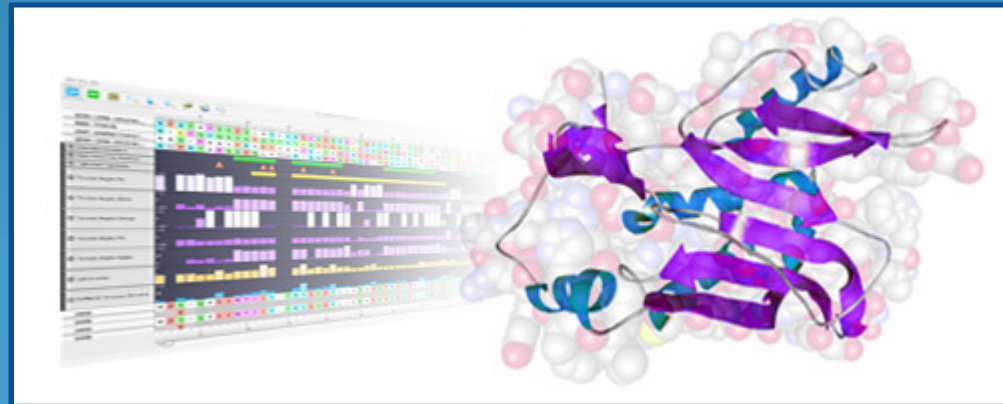
e-Science and Ancient Documents (eSAD)

- Aid the reading of documents, with the help of technology & creating new software.



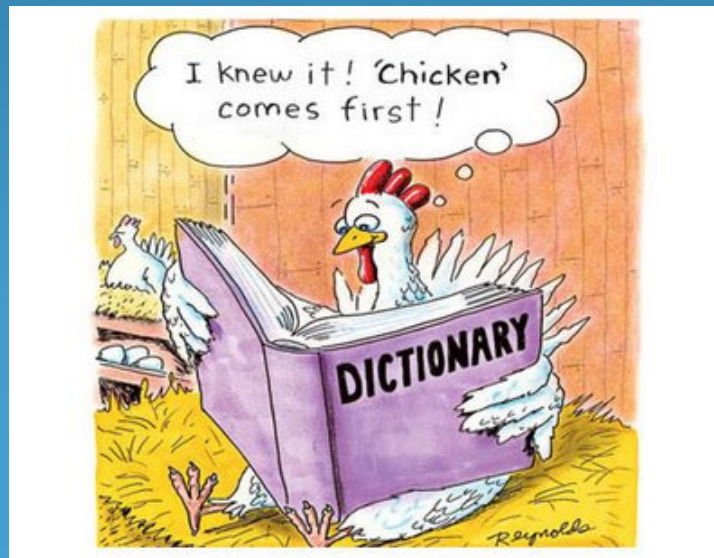


Utopia is a collection of interactive tools for analysing protein sequence and structure



The Future???

- No one is willing to take the first step
- Be wise with money & create assets

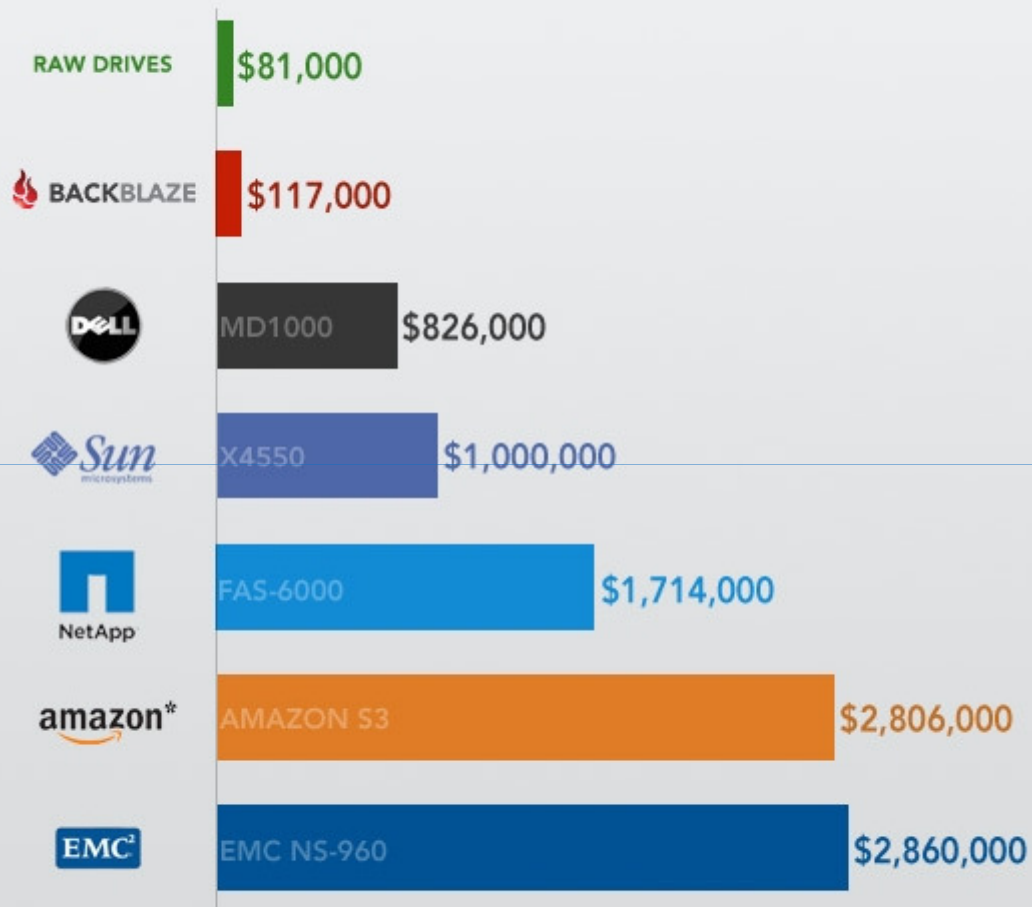


HPC ability???



- Store & process masses of data
- Central share of resources
- Everyone will talk the same
- Used as an asset in calls
- Used as a teaching platform
- Add more STEM subjects

COST OF A PETABYTE



* Amazon S3 Storage over three years (minus electricity, co-location and administration).

Developers???

- Good developer are hard to create
- Key assets for e-Science to take off
- Attractive to use in future calls and business collaborations

e-Science Ultimate Objectives...

- Create a super platform
- Human Network
- Obtain a compute platform
- Expertise ion Software solutions

- Have a dedicated e-Science team.

Closing Note...

- Yes we do need e-Science to survive
 - Its the tool to create new collaborations
 - New teaching subjects
-
- I expect a revolution within 5 years.



THANK YOU